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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,975	01/26/2006	In-hwan Choi	285040US0PCT	9519
22850 7590 04/21/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER TRAN, BINH X	
			ART UNIT	PAPER NUMBER
			1792	
			NOTIFICATION DATE	DELIVERY MODE
			04/21/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/565,975	Applicant(s) CHOI, IN-HWAN	
	Examiner Binh X. Tran	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/26/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: In page 7 lines 8-11, the applicants wrote "That is, when Cu was grown on the InSe thin film by MOCVD using a (hfac)Cu(DMB) precursor, original In has disappeared and was replaced with Cu thus showing conversion of InSe into Cu₂Se." (emphasis added). The examiner does not understand this statement. First, in the growing process, the element (indium or In) cannot disappear. The examiner clearly recognizes that the copper element may completely cover the In element during a growing process (i.e. forming Cu material over the top of In material). However, the In element cannot disappear during a growing process. Second, it is not possible to covert InSe into Cu₂Se (i.e. In element coverts into Cu). The examiner clearly recognizes that during chemical reaction a new compound/or product is formed, wherein the product comprises of all the elements from the reactant (for example $H_2 + \frac{1}{2} O_2 = H_2O$). However, it is not possible to convert one element (In) into another element (Cu) during normal chemical reaction. In order to convert one element into another element, a nuclear reaction (i.e. either nuclear fusion reaction or fission reaction) must occur.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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3. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claim 1, the examiner does not understand the limitation “forming a thin film of the I-III-VI₂ compound on the thin film of the I₂-VI compound by Metal Organic Chemical Vapor Deposition using a single precursor including elements of Groups III and VI.” (emphasis added). It is not possible to form a compound comprises three elements (i.e. I-III-VI₂ compound) using a single precursor including elements of Group III and VI (i.e. Group I element is missing). In order to form a compound of I-III-VI₂ using a single precursor, the single precursor must include element of Groups I, II and VI.

In claims 2-3, the examiner does not understand the limitation “a forth step of forming a thin film of the I-III-VI₂ compoundby Metal Organic Chemical Vapor Deposition using a single precursor including elements of Groups III and VI.” (emphasis added). It is not possible to form a compound comprises three elements (i.e. I-III-VI₂ compound) using a single precursor including elements of Group III and VI (i.e. Group I element is missing). In order to form a compound of I-III-VI₂ using a single precursor, the single precursor must include element of Groups I, II and VI.

Claims 4-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement because they directly or indirectly depends on claim 1, or claim 2, or claim 3.

In claim 9, the examiner does not understand the limitation "forming a CuInSe₂ thin film on the Cu₂Se thin film by Metal Organic Chemical Vapor Deposition using a single precursor including In and Se" (emphasis added). It is not possible to form a CuInSe₂ compound using a single precursor including In and Se (i.e. element Cu is missing). In order to form a compound of CuInSe₂ using a single precursor, the single precursor must include Cu, In and Se.

In claim 10, the examiner does not understand the limitation "forming a CuIn_{1-x}Ga_xSe₂ thin film on the CuInSe₂ thin film by Metal Organic Chemical Vapor Deposition using a single precursor including Ga and Se" (emphasis added). It is not possible to form a CuIn_{1-x}Ga_xSe₂ using a single precursor including Ga and Se (i.e. Cu and In elements are missing). In order to form a CuIn_{1-x}Ga_xSe₂ using a single precursor, the single precursor must include Cu, In, Ga and Se.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 is indefinite because it is unclear what "x" represents in the formula and what the possible value for "x".

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO 892.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571)272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Binh X Tran
Primary Examiner
Art Unit 1792

/Binh X Tran/
Primary Examiner, Art Unit 1792